

Executive Development
(R123)

Research Self-Study Workbook

TABLE OF CONTENTS

Introduction to the Workbook	1
Self-Check 1: Applied Research Project Criteria	1
Self-Check 2: Applied Research Project Purpose	2
Self-Check 3: Selecting a Research Methodology	2
Self-Check 4: Primary and Secondary Sources	3
Practice Exercise 1: Distinguishing between Primary and Secondary Sources	3
Self-Check 5: Keywords	4
Practice Exercise 2: Searching the Learning Resource Center Online Card Catalog	4
Practice Exercise 3: Using Search Engines	6
Job Aid 1: Steps in a Literature Review	8
Self-Check 6: Quotations	9
Self-Check 7: Implementation and Documenting Your Procedures	9
Self-Check 8: Research Methods and Procedures	10
Self-Check 9: Applied Research Project Elements and Contents	11
Self-Check 10: Locating Information in the <i>Executive Fire Officer Program</i> <i>Guidelines</i>	12
Self-Check 11: Locating Information in the <i>American Psychological</i> <i>Association Manual</i>	12
Self-Check 12: Citing Sources in the Applied Research Project Text	13
Self-Check 13: Citing Sources in the Applied Research Project Reference List	14
Answers to Self-Checks	16

INTRODUCTION TO THE WORKBOOK

This Workbook is intended to help you to master the content presented in the Self-Study Guide. The Workbook activities are directly related to the most important information presented in the Self-Study Guide. If you have any questions about the Workbook exercises, review the content of the Modules in the Self-Study Guide.

The answers to questions are in the Answer section at the end of the Workbook.

SELF-CHECK 1: APPLIED RESEARCH PROJECT CRITERIA

Place a check beside the statement(s) below that describe Applied Research Project (ARP) criteria. (Select all correct responses.)

- ☐ 1. The ARP presents original information that the author discovered.
- ☐ 2. The ARP is a mainly a summary of research published by others.
- ☐ 3. The ARP is relevant to the fire service in general, not to any specific fire organization.
- ☐ 4. The ARP is relevant to the content of an elective National Fire Academy (NFA) course not in the Executive Fire Officer Program (EFOP) curriculum.
- ☐ 5. The ARP relates to solving a problem in the EFOs own organization.
- ☐ 6. The research relates to one of the five United States Fire Administration (USFA) operational objectives, which are:
 - a. Reduce the loss of life from fire in the age group 14 years old and below.
 - b. Reduce the loss of life from fire in the age group 65 years old and above.
 - c. Reduce the loss of life from fire of firefighters.
 - d. Promote within communities a comprehensive, multi-hazard risk-reduction plan led by the fire service organization.
 - e. To respond appropriately in a timely manner to emerging issues.

SELF-CHECK 2: APPLIED RESEARCH PROJECT PURPOSE

Which of the following is a major goal of the ARP requirement? (Select all correct responses.)

- ☐ 1. To accumulate a collection of research papers to expand the LRC holdings.
- ☐ 2. To give EFO's opportunities to collect data that will lead to positive change in the organizations to which they belong.
- ☐ 3. To evaluate EFOP courses.
- ☐ 4. To enhance the professionalism of the fire service.

SELF-CHECK 3: SELECTING A RESEARCH METHODOLOGY

On the line beside each ARP purpose statement in column 1, write the letter corresponding to the research methodology listed in column 2 that would be most appropriate for the research.

Purpose Statement	Research Method
<input type="checkbox"/> 1. The purpose of this research is to document the effects of the lack of diversity in the fire department workforce on attitudes of this community toward the fire department.	a. Historical
<input type="checkbox"/> 2. The purpose of this research is to document the progress my organization has made between 1990 and 2003, towards the goal of creating a diverse workforce.	b. Descriptive
<input type="checkbox"/> 3. The purpose of this research is to develop, implement, and evaluate a solution to a performance problem in my organization.	c. Evaluative
<input type="checkbox"/> 4. The purpose of this research is to collect and analyze data on the time required and the cost of training Emergency Medical Technician (EMT) dispatchers on new software. The data will be used to decide whether to implement this software in my organization.	d. Action

SELF-CHECK 4: PRIMARY AND SECONDARY SOURCES

Place a "P" on the line before each statement below that describes a primary source; and an "S" before each statement that describes a secondary source.

- ___1. A standard operating procedure (SOP) your organization uses to select new recruits from applicants.
- ___2. A description of a meeting by a firefighter who heard about it from another person, but did not attend the meeting himself.
- ___3. A presentation describing a research study, given by the researcher who carried out the study.
- ___4. A discussion of a research project in the literature review section of an ARP written by another EFO.

PRACTICE EXERCISE 1: DISTINGUISHING BETWEEN PRIMARY AND SECONDARY SOURCES

In the space below, write an example of a primary source:

Now write an example of a secondary source:

SELF-CHECK 5: KEYWORDS

Whichever research method you use, you need to review the literature on your problem. Begin by developing a list of key words.

For each purpose statement listed in Column 1 of the table below, write in Column 2 at least two keywords that you could use to begin a literature search related to that purpose statement.

Purpose Statement	Keywords
1. The purpose of this research is to explain the relationship between the diversity of the firefighter workforce and the attitudes of this community toward the fire department.	
2. The purpose of this research is to describe the progress the Anytown fire department has made towards creating a diverse workforce between 1999 and 2002.	
3. The purpose of this research is to collect and analyze data on the time required and the cost of training EMT dispatchers on Brand X software. My data will be used to decide whether to implement this software in my organization.	
4. The purpose of this research is to collect data to improve the retention of women and minority firefighters in my organization.	

PRACTICE EXERCISE 2: SEARCHING THE LEARNING RESOURCE CENTER ONLINE CARD CATALOG

A good source of literature on fire service topics is the Learning Resource Center (LRC) online catalog (OCC), which contains a very wide collection of publications related to fire and emergency response.

Let's practice using this resource.

- Go to your browser and enter the Web site address <http://www.lrc.fema.gov>.

- On the LRC Home Page, select "Search Card Catalog" or select "Hints and Tips for Information on Searching the Card Catalog."
- Select "Free Search" and enter your keywords. This will show the number of "Records Retrieved" related to your keywords.
- To see a list of all the records retrieved, select "Display Selections."
- The entire list will display. Click on one of the items to see a complete reference.
- Return to your topic list and narrow your search by adding another search term, or by searching for a specific type of publication or time period.

For example, to search for current books that deal with your topic, enter the dates "2001" and "2002," and scroll down to "Books" in the "Document Type" field. This will narrow your original list to books on your topic published in those years. Click on "Search" and this list will display.

The LRC online catalog will not allow you to download items to your computer, but you can get many (though not all) items in their catalog delivered to your local library through interlibrary loan.

Information on interlibrary loan is available at the LRC Web site, and you also will be given specific instructions and interlibrary loan forms when your class visits the LRC during your EFOP course. For practice now, just click on an item of interest and retrieve the information in the OCC on the item.

You will see this information:

- Document Type (book, journal, etc.);
- Author's Full Name;
- Title;
- Series Title, if applicable;
- Publisher;
- Place of Publication;
- Date of Publication;
- Collation (number of pages);
- Call Number in the LRC collection;
- Notes (brief description of the contents; helps you to decide whether you want to see this item.); and

- Subjects (related subjects under which this work is listed in the OCC.)

Searching under other subjects may help you to locate other items of interest to expand your literature search.) You also will see whether the item is available on interlibrary loan.

PRACTICE EXERCISE 3: USING SEARCH ENGINES

Another way to search the literature on your problem is to go to a search engine. Make your key words as specific as possible. Include all the terms you are interested in. For example, if you are looking for articles on fire prevention programs in Hawaii, enter "fire prevention programs Hawaii," rather than "fire prevention."

For practice, try using the search engine **Google**. Go to your browser, type in "Google.com," enter "fire prevention" at the cursor, and click on the "Google Search" bar. You will retrieve a list of items. Clicking on an item will retrieve that item.

Now try entering "fire prevention" in these other search engines.

- <http://www.altavista.com>
- <http://www.alltheweb.com>
- <http://www.excite.com>
- <http://www.hotbot.com>
- <http://www.yahoo.com>

As you see, there is duplication, but usually each search engine will have some different items. Each search engine also will direct you to other items related to the one you entered.

For example, in **Google**, at the top of the list you retrieved, there will be a "Category" bar showing other items relevant to the one you entered. Clicking on a category on this bar will retrieve a list of items in *Google* in that category.

This feature is available in different places on the page in each search engine. **Excite.com** has a block at the top with the words "Are you looking for?" **Hotbot.com** has a "Related Categories" block at the bottom of page 1; **Yahoo.com** lists other search engines you can access by clicking on them.

Now narrow your search.

To narrow your search, include all the terms you are interested in. For example, if you are interested in fire prevention and children, enter "fire prevention and children." You will retrieve a list of references related specifically to fire prevention and children and juveniles. Then try entering "fire prevention and buildings and design." You will retrieve a list of references related to building safety, building codes, and related topics.

Retrieving resources identified from online search engines:

Some of the articles you identified through search engines will be available for download to your computer. Other references will direct you to books or other sources that you can get from your local library, or a local or online bookstore.

JOB AID 1: STEPS IN A LITERATURE REVIEW**Here are 11 Steps to Follow in Conducting Your Literature Review:**

1. Make a list of topics related to each of your study questions.
2. For each question, organize your topics, from the most broad to the most narrow focus.
3. Identify keywords related to each topic.
4. Using the keywords, locate sources relevant to each topic, in the LRC, other library collections, and online databases, e.g., **Google**.
5. Discard any sources that are not directly relevant to one of your study questions.
6. Evaluate each source you identify for bias, credibility, and timeliness.
7. Document each source carefully to ensure that you can locate it again.
8. Write down the exact text and location of any direct quotation you plan to use.
9. For each study question, summarize similar research findings and contrast them with research findings that are contradictory.
10. Write a concluding sentence that summarizes the research on the topics associated with your first research question, and move to the topics associated with your next question. Continue until you have discussed all your questions.
11. Conclude your Literature Review with a statement that summarizes all the research you have discussed, in terms of your research purpose, and describe the research method you plan to use to address your own research problem.

SELF-CHECK 6: QUOTATIONS

Place a "T" beside each of the following statements that is True, and an "F" beside each that is False.

- ___1. When you use extensive quotations instead of paraphrasing the content of the author's ideas, this suggests that you cannot explain how the material being quoted relates to your research.
- ___2. Any quotation of more than 40 words must be blocked as an indented paragraph, with no quotation marks.
- ___3. Long quotations can be single-spaced.
- ___4. Direct quotations should be used only if the words quoted are unique and totally relevant.
- ___5. If you paraphrase words of another author, but do not quote him/her directly, you must identify the author in your ARP.

SELF-CHECK 7: IMPLEMENTING AND DOCUMENTING YOUR PROCEDURES

Place a "T" before each statement that is True, and an "F" before each that is False.

- ___1. If your research procedures included interviews, the Procedures section of your ARP must explain how you selected the individuals to be interviewed.
- ___2. As long as you collect data only from fire service personnel, through interviews, surveys, or personal observations, you do not need to ensure confidentiality.
- ___3. If you collect data using personal observations, you can "just show up" to observe whenever you have time.
- ___4. ARP survey data can be collected from any available group of EFO's.
- ___5. Responses to closed-ended and forced-choice survey questions are easier to analyze.
- ___6. To survey a sample of 200 EFO's in a geographic area of interest, distributing 132 surveys will account for nonresponders.

SELF-CHECK 8: RESEARCH METHODS AND PROCEDURES

On the line before each research method listed in Column 1, write the letter (A, B, C, D) in Column 2 that is next to the list of procedures in Column 3 that is appropriate for that research method.

1. Method	2.	3. Related Procedures
__1. Descriptive	A	<ul style="list-style-type: none"> • Collect relevant documents, such as SOP's; policies, regulations, etc. • Make a chronological list of events that led up to the present problem. • Identify factors/effects/causes related to each event and to the present problem. • Interview or survey people who have first-hand knowledge of past events related to the problem. • Analyze, organize, and synthesize all collected data in the context of your purpose and research questions. • Based on your conclusions about the past, make generalizations about the present and/or future.
__2. Historical	B	<ul style="list-style-type: none"> • Define what you want to report on. • Decide how to collect information--through questionnaire survey, interviews, observation, or a combination. • Decide who will be surveyed, interviewed, or observed. • Develop your research protocols. • Collect and analyze your data. • Organize your data, by research questions. • Draw conclusions based on your findings.
__3. Evaluative	C	<ul style="list-style-type: none"> • Decide what you want to analyze. • Define objective, measurable criteria. • Develop an evaluation protocol by which to measure the criteria. • Collect and analyze your data. • Organize your data, based on your research questions. • Draw conclusions based on your findings.
__4. Action	D	<ul style="list-style-type: none"> • Define the problem you want to solve. • Design strategies to minimize factors that are contributing to the problem; and to capitalize on factors that can help to resolve the problem. • Develop specific, measurable objectives for accomplishing each strategy. • Develop step-by-step actions plans for accomplishing each objective. • Implement the plans and monitor progress. • Evaluate outcomes.

SELF-CHECK 9: APPLIED RESEARCH PROJECT ELEMENTS AND CONTENTS

On the line before each ARP element listed in Column 1, write the letter of the description in Column 2 that best defines that ARP element.

ARP Element	Description
__1. Title	a. Contains surveys, large tables, research products.
__2. Abstract	b. Places the ARP research in the context of the existing body of knowledge. Reports what other researchers have written about the problem.
__3. Introduction	c. Describes in detail exactly what you did in carrying out your research--how you planned and carried out your interviews, observations, surveys, etc.
__4. Background/ Significance	d. Provides answers to each of your research questions.
__5. Literature Review	e. Discusses what you think should happen next, based on what was learned from your research.
__6. Procedures	f. A short phrase containing keys words that describe the ARP content.
__7. Results	g. Interprets the results and their implications.
__8. Discussion	h. The initial statement of your research problem, purpose, research method, and research questions.
__9. Recommendations	i. Explains why the research is worth doing, how the problem affects your organization, the research method you selected, and how your research can lead to a solution of the problem.
__10. Reference List	j. Briefly summarizes the entire ARP research effort.
__11. Appendices	k. Provides retrieval information for each source cited in the ARP.

SELF-CHECK 10: LOCATING INFORMATION IN THE *EXECUTIVE FIRE OFFICER PROGRAM GUIDELINES*

Where will you find the following information? List chapter and page.

1. Timelines for ARP submissions? _____
2. Specific criteria on how each element of your ARP will be evaluated? _____
3. A copy of the ARP Proposal Form? _____
4. Warnings related to plagiarism? _____
5. Information on the Outstanding Research Award? _____

6. Information on college credit for ARP's? _____
7. Identification of the Sections of the American Psychological Association (APA) Guide that are used in preparing ARP's? _____

SELF-CHECK 11: LOCATING INFORMATION IN THE *AMERICAN PSYCHOLOGICAL ASSOCIATION MANUAL*

Where will you find the following information? List Chapter and page or section.

1. How to describe racial and ethnic identity? _____
2. How to cite references in the text of an ARP? _____
3. How to use commas correctly? _____
4. How to cite sources in a Reference List? _____
5. Rules for hyphenating compound words? _____
6. Suggestions for formatting tables? _____
7. Rules for referencing an article retrieved from the Web in your ARP Reference List? _____

SELF-CHECK 12: CITING SOURCES IN THE APPLIED RESEARCH PROJECT TEXT

1. In the space below, write two different statements that would correctly cite the following information in an ARP text:

Dr. John Jones reported in his 1995 book, *The Anxious Student*, published by Scholarly Research Co., of New York City, that students often had difficulty using APA guidance because they were using this style manual for the first time and did not ask their teachers for help.

2. In the space below, write the following statement as it should appear in the text of an ARP.

A 1999 study by John Smith and Joan Jones found that building designers haven't learned from fire history.

SELF-CHECK 13: CITING SOURCES IN THE APPLIED RESEARCH PROJECT REFERENCE LIST

In the space below each reference identified below, write the reference in APA Style, formatted as it would appear in your ARP Reference List.

1. A 1995 book by Dr. John Jones, titled, The Anxious Student, published by Scholarly Research Co., of New York City.

2. An article that appeared on page A1, and was continued on A12, in the Washington Post of November 14, 2002. The article, written by John Mintz and Mike Allen was titled, "House passes Homeland Security Bill."

3. Section 4.1 of NFPA 1000, Standard for Fire Service Professional Qualifications, Accreditation and Certification Systems 2000 Edition published by the National Fire Protection Association of Quincy, MA.

4. Leadership on the Line, a book by Ronald A. Heifetz and Marty Linsky, published in 2002, by the Harvard Business School Press, located in Cambridge, MA.

5. An article titled, Breaking Ground, written by A. L. Williams and W. M. Clark, which appeared in Volume 28, pages 14 to 16 of the journal, Administration Science Quarterly May 2001.

6. Choosing Keywords, which is paragraph 2 of an article entitled, The Basics of Google Search, downloaded from the search engine Google, on November 1, 2002, at
<http://www.google.com/help/basics.html>.

7. A book entitled Performance Improvement Pathfinders, edited by Peter J. Dean and David E. Ripley, published in 1997 by the International Society for Performance Improvement.

8. All in a Day's Work, an article on page 1 of the September 29, 2002 issue of the online magazine Firehouse.com, retrieved on November 15, 2002, from <http://www.firehouse.com/lodd/2002services/iaff/0920.html>.

Now renumber these references in the order in which you would list them in your ARP, following APA style.

ANSWERS TO SELF-CHECKS

Self-Check 1:

1, 5, and 6 are correct.

2 is incorrect. An ARP must be your own **original** research.

3 is incorrect. The ARP must relate to your own organization.

4 is incorrect. The ARP must relate to the EFOP course you most recently completed.

Review the Introduction to the Self-Study Guide if you missed these.

Self-Check 2:

2 and 4 are correct.

1 is incorrect. The LRC does acquire all ARP's that meet NFA criteria, but this is not a purpose of the ARP.

3 is incorrect. ARP research is not involved with evaluation of the EFOP courses.

Review Module 1 in the Self-Study Guide if you missed these.

Self-Check 3:

Correct matches: 1b, 2a, 3d, 4c.

Review Module 2 in the Self-Study Guide if you missed these.

Self-Check 4:

1 and 3 are primary sources; 2 and 4 are secondary sources.

Review Module 3, Step 3, in the Self-Study Guide if you missed these.

Self-Check 5:

Possible keywords:

1. diversity, firefighters, community attitudes.
2. diversity, fire service, Anytown FD.
3. EMT software, Brand X, cost of Brand X software training.
4. women firefighters, minority firefighters, retention.

Self-Check 6:

1, 2, 4, and 5 are True.

3 is False. All text in the ARP is double-spaced.

Review Module 3, Step 3, in the Self-Study Guide if you missed these.

Self-Check 7:

1 and 5 are True.

2 is False. You need to ensure confidentiality to all respondents, regardless of who they are.

3 is False. You must either observe at randomly selected times, or at one specific time period.

4 is False. You must select your sample according to specific criteria related to your study.

6 is False. You would need to survey 158 respondents to account for the anticipated 20 percent nonresponse rate.

Self-Check 8:

Correct matches: 1B, 2A, 3D, 4C.

Review Module 3, Step 4, in the Self-Study Guide if you missed these.

Self-Check 9:

Correct matches: 1f, 2j, 3h, 4i, 5b, 6c, 7d, 8g, 9e, 10k, 11a.

Review Module 3 in the Self-Study Guide if you missed these.

Self-Check 10:

Locations of items in the *EFOP Guidelines*

1. III-1.
2. Appendix A, p. A-2, A-3.
3. Appendix A, p. A-7.
4. I-12.
5. I-14.
6. I-16.
7. II-11 to II-14.

Review Module 4 in the Self-Study Guide if you missed these.

Self-Check 11:

Locations of items in the *APA Manual*

1. Chapter 2, Sec. 2.15.
2. Chapter 3, p. 207-214.
3. Chapter 3, Sec. 3.02 p. 78-80.
4. Chapter 4, p. 215-281.
5. Chapter 3, Table 3.1, p. 91.
6. Chapter 3, Sec. 3.62, p. 147.
7. Chapter 4, p. 268.

Self-Check 12:

1. These two formats would both be correct:

Jones (1995) reported that students often had difficulty using APA guidance because they were using this style manual for the first time and did not ask their teachers for help.

One study found that students often had difficulty using APA guidance because they were using this style manual for the first time and did not ask their teachers for help (Jones, 1995).

2. Smith and Jones (1999) found that building designers haven't learned from fire history.

Review Module 5 in the Self-Study Guide if you missed these, or go to Chapter 3, p. 207 in the *APA Manual*.

Self-Check 13:

Here is the list of references, arranged in correct order, double-spaced, and with hanging indents, as they would appear in an ARP Reference List:

All in a day's work (2000, September 29). *Firehouse.com*, p. 1. Retrieved on November 15, 2002, from <http://www.firehouse.com/lodd/2000services/iaff/0920.html>

Basics of google search. Choosing keywords ¶ 2. Retrieved November 1, 2002 from <http://www.google.com/help/basics.html>

Dean, P. J. & Ripley, D. E. (Eds.). (1997). *Performance improvement pathfinders*. Silver Spring, MD: International Society for Performance Improvement.

Heifetz, R. A. & Linsky, M. (2002). *Leadership on the Line*. Cambridge, MA: Harvard University Press.

Jones, J. (1995). *The anxious student*. NY: Scholarly Research Co.

Mintz, J. and Allen, M. (2002, November 14). House passes Homeland Security Bill. *The Washington Post*, pp. A1, A12.

National Fire Protection Association. (2000). *NFPA 1000 standard for fire service Professional qualifications, accreditation and certification systems, 2000 Edition*. Quincy, MA: Author, § 4.1.

Williams, A.L. & Clark, W. M. (2001). Breaking ground. *Administration quarterly*, 28, 14-16.

Review Module 6 in the Self-Study Guide if you missed these, or go to Chapter 4 of the *APA Manual*. Pages 232 to 239 contain an index to 95 examples of references.